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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,701	01/24/2002	Ji Zhang	84090	3604

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WELSH & KATZ, LTD  
120 S RIVERSIDE PLAZA  
22ND FLOOR  
CHICAGO, IL 60606

EXAMINER
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RAHMJOO, MANUCHER

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 11/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/057,701

Applicant(s)

ZHANG, JI

Examiner

Mike Rahmjoo

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1- 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8 and 9 is/are rejected.
- 7) ☒ Claim(s) 7 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,6. 6) ☐ Other:

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 1 line 6 on page 53 recites" ...the rows (or the columns)..." and line 9 on page 53 recites" ...corresponding columns (or rows)..."

It is not clear to the examiner if it is the corresponding rows or the column that is being claimed.

As per claim 1 line 13 on page 53 recites" ...the same or nearby neighboring map..." and line 15 on page 53 recites " ...of the neighboring map..."

It is not clear to the examiner whether it is the same or the neighboring map which is being claimed.

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Further clarification of the above rejection to claim 1 and other claims is respectfully requested.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1- 4, and 8- 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Grinstein et al (US 2003/0030637), hereinafter, Grinstein.

As per claims 1 and 9 Grinstein teaches providing a matrix of clustered multidimensional biological data where the rows (or the columns) of the matrix are map units representing clusters of individuals mapped to that map unit and the corresponding columns (or rows) represent the

components of the data clustering see for example column 9 paragraph [0133] and column 18 paragraph [0021]; and presenting the clustered biological data as a neighborhood map comprised of the map units where similar data is mapped to the same or nearby neighboring map units (grouping of exons within a cluster) see for example column 18 paragraph [0211]; and as to the best understanding of the examiner in light of the 112 rejections made above that Grinstein teaches shading the map units of the neighborhood map according to the value of a select component of the data cluster represented by the map unit to provide a component plane presentation to visualize the biological data see for example column 16 paragraph [0189] and paragraph [0190].

As per claim 2 Grinstein teaches the biological data is from a microarray (manipulation of the multi- dimensional array) see for example column 3 paragraph [0019].

As per claim 3 Grinstein teaches the microarray provides data regarding gene expression see for example column 10 paragraph [0140] and column 11 paragraph [0145].

As per claim 4 Grinstein teaches the map units are shading by color see for example column 17 paragraph [0191- 0192] and column 30 paragraph [0304].

As per claim 8 Grinstein teaches the neighborhood map is comprised of hexagonal map units see for example column 17 paragraph [0192] and figures 36 and 46.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5- 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grinstein et al (US 2003/0030637).

As per claims 5- 6 Grinstein teaches different mathematical methods being used e.g. in Clustering, classification, statistical analysis.

However, Grinstein does not teach the clustering using self-organizing map and unsupervised learning methods.

Grinstein teaches in the background of the invention the use of clustering, classification, numerical prediction and statistical analysis, to include general techniques such as Neural Networks, Support Vector Machines, Multiple Dimension Scaling, K- Means, Decision Trees, Association Rules, and similar methods described at length in the technical literature see for example column 1 paragraph [0004].

It would have been made obvious to one of ordinary skilled in the art at the time the invention was made to incorporate the teaching of the background of the invention to Grinstein

to utilize different methods of analyzing data, the different methods allow Grinstein an improved method of analyzing the relationships among different variables represented by the data, see for example, column 1 paragraph [0004].

### ***Allowable Subject Matter***

Claims 7 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

None of the prior art, either singularly or in combination, teaches or fairly suggests applicant's claimed invention of " providing an input matrix of biological data wherein the different rows (or columns) i represent different experiments and the different columns (or rows) n represent the outputs of the experiment with variations in a parameter".

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure; 5,544,283, and 5,398,290.

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### **Inquiry**

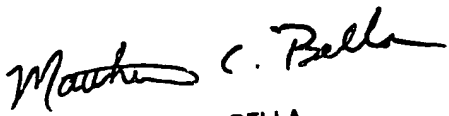
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Rahmjoo whose telephone number is (703) 305- 5658. The examiner can normally be reached on 6:30- 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (703) 308- 6829. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872- 9314 for regular communications and (703) 872- 9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305- 4750.

Mike Rahmjoo

October 28, 2003

  
MATTHEW C. BELLA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600